

SUMMARY: IMPACTS OF THE CLEAR SKIES INITIATIVE ON EPA REGION V¹

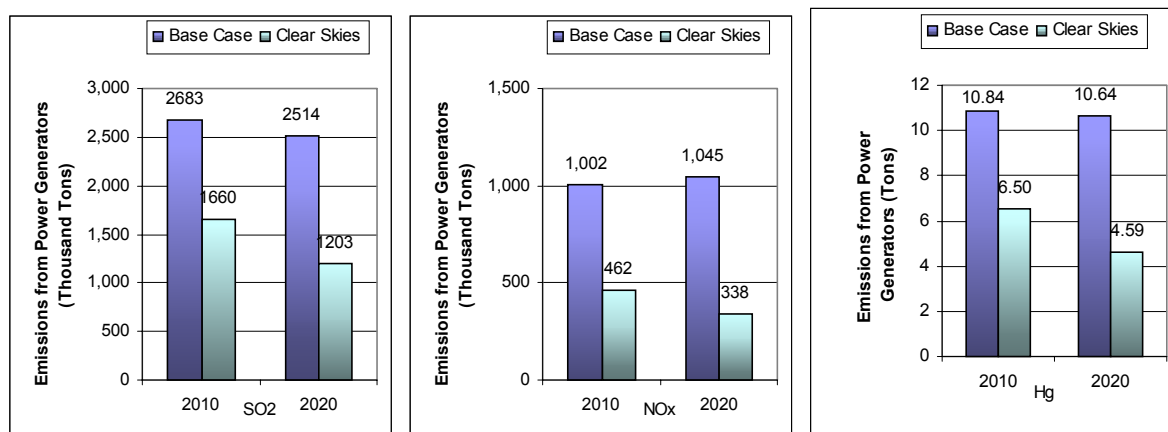
EPA Region V includes Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

Costs: *Nationwide*, the projected annual costs of Clear Skies (in \$1999) are \$3.69 billion in 2010 and \$6.49 billion in 2020.²

Changes in Emissions under Clear Skies: Clear Skies will result in significant emissions reductions from power generators by 2020:

- *Nationwide*, by 2020 SO₂ emissions from power generators are projected to be 3.9 million tons (a 65% reduction relative to 2000 emissions). NOx emissions are projected to be 1.7 million tons (a 67% reduction relative to 2000 emissions) and mercury emissions are projected to be 18 tons (a 63% reduction relative to 2000 emissions). At full implementation, the emission reductions will be 73% for SO₂, 67% for NOx, and 69% for mercury.
- *In EPA Region V* by 2020, Clear Skies is projected to reduce SO₂ emissions from power generators by 62%, NOx emissions by 74% and mercury emissions by 63% relative to 2000 emissions.

Figures 1a, 1b and 1c. Existing Clean Air Act (base case³) vs. Clear Skies Region V in 2010 and 2020



- Emissions rates in Region V in 2010 and 2020:

Table 1. Projected Emissions Rates in 2010 and 2020 in Region V from Power Generators

Year		SO ₂	NOx		Hg	
		Coal	All	Coal	Gas	Coal
	Units	lbs/MMBtu	lbs/MMBtu	lbs/MMBtu	lbs/MMBtu	lbs/TBtu
2010	Base Case	0.99	0.35	0.36	0.12	4.00
	Clear Skies	0.62	0.16	0.17	0.11	2.44
2020	Base Case	0.88	0.33	0.36	0.11	3.74

¹ The projected impacts are EPA estimates, EIA's modeling would likely show different impacts.

² EPA uses the Integrated Planning Model (IPM) to project the economic impact of Clear Skies on the power generation sector. IPM disaggregates the power generation sector into specific regions based on properties of the electric transmission system, power market fundamentals, and regional environmental regulations. These regions do not conform to States or EPA region boundaries making some compliance options, such as dispatch, and associated costs impractical to differentiate at a State or Regional level.

³ The base case includes Title IV, the NOx SIP call and State-specific caps in CT, MO and TX. It does not include mercury MACT in 2008 or any other potential future regulations to implement the current Clean Air Act.

	Clear Skies	0.45	0.11	0.11	0.09	1.71
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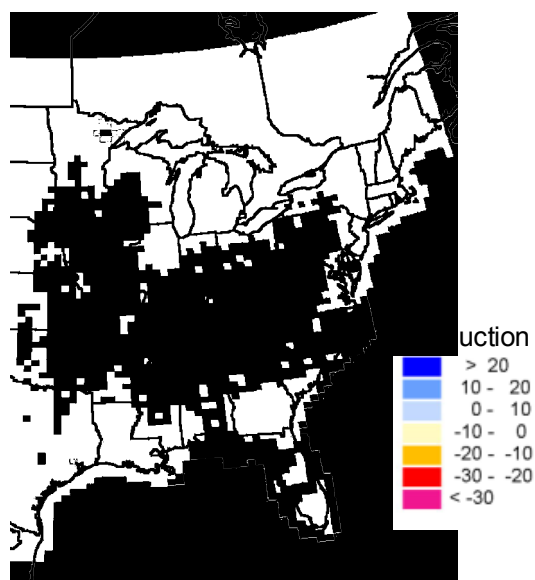
Human Health and Environmental Benefits of Clear Skies: Clear Skies would protect human health, improve air quality, and reduce deposition of sulfur, nitrogen, and mercury.

- *Nationwide* in 2010, early reductions under Clear Skies would result in 6,400 fewer premature deaths and over \$40 billion in annual health benefits from the reduction in fine particulate matter alone.
- *Nationwide* by 2020, when fully implemented, health benefits from fine particles alone would total \$93 billion (almost 12,000 fewer premature deaths), far outweighing the costs of the Clear Skies program. Approximately \$19 billion of those benefits would occur *in Region V*.
 - *Nationwide*, using an alternative methodology results in over 7,000 premature deaths prevented and \$11 billion in benefits in 2020—still exceeding the costs of the program⁴.
- *In Region V*, the annual health benefits of Clear Skies in 2020 include:
 - approximately 2,500 fewer premature deaths
 - approximately 1500 fewer cases of chronic bronchitis
 - approximately 50,000 fewer asthma attacks
 - approximately 2000 fewer hospitalizations and emergency room visits
 - approximately 400,000 fewer lost work days due to respiratory symptoms
- 6 counties (home to approximately 2 million people) *in Region V* would come into attainment with the fine particle standard under Clear Skies by 2010 (beyond expectations from existing programs)
- By 2020, 12 counties (home to approximately 5 million people) *in Region V* would come into attainment with the fine particle standard under Clear Skies (beyond expectations from existing programs)

⁴ The two sets of benefits estimates presented here reflect alternative assumptions and analytical approaches regarding quantifying and evaluating the effects of airborne particles on public health. The Base Estimate relies on estimates of the potential cumulative effect of long-term exposure to particles on mortality, while the Alternative Estimate presumes that PM effects on mortality are limited to those that accumulate over much shorter time periods. All such estimates are subject to a number of assumptions and uncertainties. It is of note that, based on recent preliminary findings from the Health Effects Institute, the magnitude of the short-term mortality (alternative estimates) and hospital/ER admissions estimates (both estimates) may be overstated. The alternatives also use different approaches to value health effects damages. The key assumptions, uncertainties, and valuation methodologies underlying the approaches used to produce these results are detailed in a benefits analysis technical support document that will accompany the benefits analyses for the Clear Skies proposal.

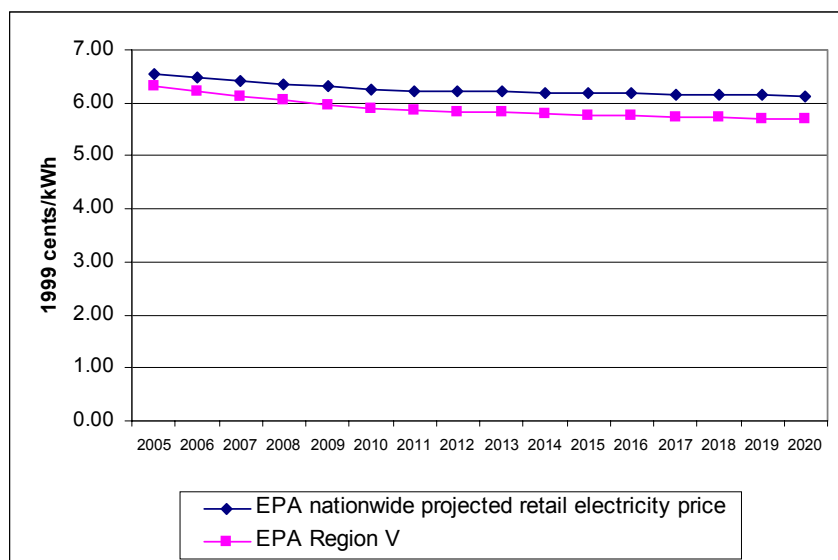
- By 2020:
 - there would be substantial reductions in fine particle concentration in most of Region V compared to 1996 levels (see map)
 - the increase in fine particle concentration in Minnesota is due to emissions from a non-electric generating source category not affected by the Clear Skies program
 - fine particle concentration would decrease 10-20% beyond expectations from existing programs in Ohio, Indiana, Illinois, and part of Wisconsin
 - sulfur deposition would decrease 30-60% (15-60% beyond existing programs) in Illinois, Indiana, and Ohio
 - nitrogen deposition would decrease 30-60% (10-30% beyond existing programs)
 - preliminary estimates indicate mercury deposition would decrease substantially
 - visibility would improve 1-3 deciviews from 1996 levels from 1996 levels (a change of 1 deciview is a perceptible change)

Figure 2. Percent change in fine particle concentration, 1996 vs. Clear Skies (2020)



Changes in Projected Retail Electricity Prices under Clear Skies: In 1999, the average retail electricity price in EPA Region V was approximately 6.33 cents/kWh⁵, which was slightly below the average *national* retail price of approximately 6.66 cents/kWh (1999 data from EIA).⁶ As shown in Figure 3, retail prices in EPA Region V are projected to decrease and remain below the projected national average between 2005 and 2020.⁷

Figure 3. Projected Retail Electricity Prices in EPA Region V under Clear Skies (2005-2020)



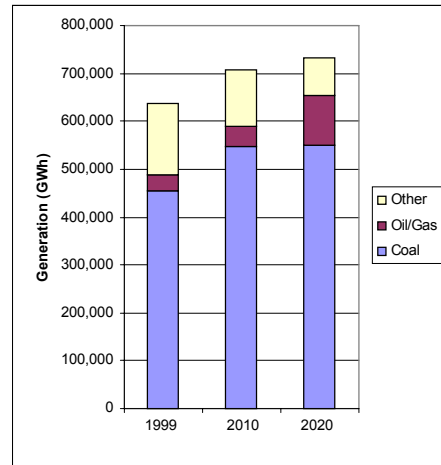
⁵ This was an average of the states in EPA Region V, weighted by utility retail sales

⁶ Source: EIA at http://www.eia.doe.gov/cneaf/electricity/page/fact_sheets/retailprice.html

⁷ Retail electricity prices vary considerably across the United States. Variation in prices can be caused by many factors including access to low cost fuels for generating power, State taxes, and the mix of power plants in the States. Projected retail electricity prices were weighted based on capacity of the NEMS/NERC regions (ECAR, MAIN MAPP) within EPA Region V.

Generation in EPA Region V under Clear Skies: Coal-fired power plants currently produce 71% of the electricity generated in EPA Region V. This contribution of coal-fired generation will increase to approximately 77% by 2010 and 75% by 2020.

Figure 4. Current and Projected Generation by Fuel Type in EPA Region V under Clear Skies (GWh)⁸



- EPA does not project that any facilities in EPA Region V will switch from coal to natural gas in response to the Clear Skies emissions caps. Instead, Region V reduces its emissions through the installation of control technologies:
 - In 2020, there is projected to be approximately 78,700 MW of coal-fired capacity under Clear Skies in EPA Region V. 58,000 MW would have Selective Catalytic Reduction (SCR), 31,400 MW would have scrubbers, and 900 MW would have activated carbon injection.
- 67% of EPA Region V's coal-fired generation comes from coal units with emission control equipment in 2010, and 81% in 2020.⁹

Coal Production in EPA Region V: EPA Region V currently produces approximately 9% of the nation's coal supply, and has about 28% of the nation's coal reserves (2000 Coal Industry Annual, Tables 1 and 33).

- EPA projects a *nationwide* 7.4 % increase in coal production by 2020, relative to 2000. Preliminary analysis shows a 48% increase in total coal production in the Interior between 2000 (145 million tons) and 2020 (214 million tons).
- Based on preliminary analysis, EPA projects a slight increase in job slots by 2020 in the Interior relative to a base case with only Title IV and the NOx SIP call. (The Interior includes coal from the Midwest, the Central West, and the Gulf.)

Major Generation Companies in EPA Region V: The ten largest plants in Region V-- each over 2228 MW -- are a combination of nuclear, coal-, petroleum- and gas-fired units. The major electric utilities include: Commonwealth Edison Co., Detroit Edison Co., Consumers Energy Co., Ohio Power Co., and Northern States Power Co.

⁸ Note: 1999 data from EIA, aggregated from state-level data found at http://www.eia.doe.gov/cneaf/electricity/st_profiles/ (Table 5).

⁹ Emissions control equipment includes, where applicable, scrubbers, selective catalytic reduction, selective non-catalytic reduction, gas-reburn and activated carbon injection.